

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>1.0 GENERAL</p> <p>1.1 Where ASME B30.26 requirements conflicts with other recognized Standards in this procurement specification ASME B30.26 shall take precedence.</p> <p>1.2 All rigging hardware supplied in accordance with this specification shall meet the latest edition of each standard as specified.</p> <p>1.3 All rigging hardware supplied in accordance with this specification shall be “NEW”. Used or refurbished hardware is not permitted.</p> <p>1.4 All rigging hardware supplied in accordance with this specification shall be procured either directly from a Original Equipment Manufacturer (OEM) or from the manufacturers Authorized Distributor (AD). If procured from the manufacturer's authorized distributor, the Buyer may request documentation (PO or Invoice) to demonstrate that the authorized distributor procured the hardware directly from the manufacturer.</p> <p>2.0 Item Specifications</p> <p>2.1 HOOKS: Rigging hooks shall meet or exceed the requirements of ANSI/ASME B30.10, <i>Hooks</i>, Chapter 10-2, “Hooks Miscellaneous.”</p> <p>2.1.1 Markings:</p> <p>1. Manufacturer’s identification shall be forged, cast, or die stamped on a low stress and non-wearing area of the hook.</p> <p>2.1.2 Construction:</p> <p>1. The hook material shall have sufficient ductility to permanently deform before losing the ability to support the load at the temperatures at which the specific hook will be used.</p> <p>3. When a latch is provided, it shall be designed to retain such items as, but not limited to, slings and chains under slack conditions.</p> <p>2.1.3 Testing:</p> <p>1. When proof tests are used to verify manufacturing process, material, or configuration, the hooks shall be able to withstand the proof load application without permanent deformation when the load is applied for a minimum of 15 seconds. This condition shall be considered to have been satisfied if the permanent increase in the throat opening does not exceed 1% or 0.02 in. (0.5 mm), whichever is greater. For such tests, Table 1 of ASME B30.10 states the proof loads that shall be applied to a hook having a rated load capacity.</p>		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>2. For a duplex (sister) hook having a pin hole, the proof load for the pin hole shall be in accordance with Table 1 of ASME B30.10. The proof load on the hook shall be shared equally between the two prongs of a sister hook, unless designed for unbalanced loading.</p> <p>2.2 EYE BOLTS: Eye bolts shall meet or exceed the requirements of ANSI/ASME B18.15, and ASTM A-489 “Standard Specification for Carbon Steel Lifting Eyes” (formerly eyebolts). This Procurement Specification is limited to forged threaded eyebolts intended primarily for lifting applications, and covers the following types and styles described in ASME B18.15 and eye bolts covered by ASTM A-489 “Standard Specification for Carbon Steel Lifting Eyes” (formerly eyebolts). Type 1, Plain pattern (straight shank) (see Table 1, as referenced in ASME B18.15) Style A, Long length Style B, Short length Type 2, Shoulder pattern (See Table 2, as referenced in ASME B18.15) Style A, Long length Style B, Short length</p> <p>2.2.1 Design Factor:</p> <p>1. Eyebolts shall have a minimum design factor of 5, based on ultimate strength.</p> <p>2.2.2 Materials and Manufacturer:</p> <p>1. The material and mechanical property requirements for general purpose carbon steel eyebolts shall comply with ASTM A-489.</p> <p>2. Melting Process: The steel shall be made by the open-hearth, basic-oxygen, or electric-furnace process and shall be made to a fine-grain practice.</p> <p>3. Forging: Lifting eyes shall be forged without welds.</p> <p>4. Heat Treatment: The lifting eyes shall be liquid quenched and tempered prior to machining the threaded end.</p> <p>5. Machining: The lifting eyes shall be machined after the quench and temper operation.</p> <p>6. Threads: The lifting eyes shall be threaded. Threads may be rolled, cut, or ground.</p>		
Page 2 of 21		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>2.2.3 Chemical Composition:</p> <ol style="list-style-type: none"> 1. Limits: The lifting eyes shall be manufactured from steels having a heat analysis conforming to the requirements in Table 1 of ASTM A-489. 2. Product Analysis: Analyses of finished lifting eyes may be made by the purchaser or may be requested to be made by the manufacturer. The composition thus determined shall conform to the product analysis requirements specified in Table 1 of ASTM A-489. 3. Chemical analyses shall be performed in accordance with Test Methods, Practices, and Terminology as defined in ASTM A-751. <p>2.2.4 Mechanical Properties:</p> <ol style="list-style-type: none"> 1. Proof Load: The lifting eyes shall withstand the proof load specified in Table 2, of ASTM A-489. <ol style="list-style-type: none"> a. The proof load shall be defined as the load that can be applied without causing permanent deformation exceeding 0.01 in. (0.255 mm) between prick punch marks at opposite ends of the diameter across the eye. The proof load shall be applied through a mandrel having a diameter of one half the nominal inside diameter of the eye. 2. The breaking strength specified in Table 2, of ASTM A-489. <ol style="list-style-type: none"> a. The breaking strength shall be determined by screwing the lifting eye to the full thread engagement into a block secured in one jaw of the testing machine and held to the other jaw by means of a mandrel passing through the eye. Failure of the lifting eye below the specified breaking strength constitutes a failure. 3. Tensile Test Requirements: A specimen machined from a finished lifting eye shall conform to the tensile requirements specified in Table 3, of ASTM A-489. <ol style="list-style-type: none"> a. When the lifting eye is too small to have a tensile bar machined from it, a test specimen from the same heat of steel and same heat treatment lot or charge as the lifting eyes to be tested shall be used to establish the tensile properties of the material in accordance with section 6.3 of ASTM A-489. b. The tensile properties shall be determined in accordance with Test Methods as defined in ASTM F-606. 4. Bend Test: Type 1 straight shank lifting eyes 1 1/2 in. (36.1 mm) or less in diameter, after being screwed into a steel block to the full thread length and bent 45° by pressure, shall not exhibit any visible surface ruptures in the unthreaded section of the lifting eye when examined at 10X magnification. 5. Impact Strength: The lifting eyes shall have an average Charpy V-notch impact strength of not less than 35 ft-lbf (47 J) at 0°C (32°F). <ol style="list-style-type: none"> a. The impact strength shall be the average of three specimens tested. Not more than one specimen shall exhibit a value below the specified minimum average, and in no case shall a value be less than 23 ft-lbf (31 J). 		
Page 3 of 21		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>b. Whenever possible, test specimens shall be taken from the shank and shall conform to the standard 10 by 10-mm Charpy V-notch specimen shown in Test Methods and Definitions A-370. When lifting eyes are too small for standard-size specimens, subsize specimens may be used, or specimens that represent the same heat and have been subjected to the same forging and heat-treating practices as the lifting eyes they represent may be taken from separate test coupons.</p> <p>c. The impact properties shall be determined in accordance with Test Methods and Definitions as defined in ASTM A-370</p> <p>2.2.5 Grain Size:</p> <ol style="list-style-type: none"> 1. The finished lifting eyes shall have an as-finished grain size of ASTM No. 5 or finer. 2. The grain size shall be rated from a broken tensile specimen end representing a heat treated lot of one size. 3. Tests shall be conducted in accordance with Test Methods E 112. <p>2.2.6 Dimensions:</p> <ol style="list-style-type: none"> 1. The dimensions of the lifting eyes shall conform to the requirements specified in latest issue of ASME B18.15 unless otherwise specified. The limiting values of all dimensions and their tolerances are to be determined by the Absolute Method as outlined in ASTM E 29. Any deviation, however small, outside of the specified limiting values signifies nonconformance with this Standard. 2. The Type and Style shall be as specified by the purchaser. When not specified, Type 1, Style B shall be furnished. 3. When dimensions other than specified in the latest issue of ASME B18.15 are required, they shall be in accordance with the purchaser's drawing. In such cases, the proof load and breaking strength requirements are not applicable because the manufacturer cannot be assured that the purchaser's proprietary design can withstand the loads in this specification. The machined specimen tensile, impact, and bend tests shall apply in addition to all other requirements of this specification. <p>2.2.7 Designation:</p> <ol style="list-style-type: none"> 1. Eyebolts shall be designated by the following data in the sequence shown below. Nominal size (fractional or decimal equivalent) threads per inch (product name; type; style; material, including specification where necessary) For example: 3/8-16, Plain pattern (straight shank) Type 1, Style A (ASTM A-489), steel 1/2- 13, Shoulder pattern eyebolt Type 2, Style B (ASTM A-489), steel. <p>2.2.8 Threads:</p> <ol style="list-style-type: none"> 1. The lifting eyes shall be threaded. Threads shall be unified coarse thread series, Class 2A (UNC 2A or UNRC 2A), as specified in ANSI/ASME B1.1. (Rolled threads to improve fatigue life of the eyebolt are desirable.) These eyebolts are intended to be used in tapped holes with Class 2B threads. 		
Page 4 of 21		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>2.2.9 Workmanship, Finish, and Appearance:</p> <ol style="list-style-type: none"> 1. The lifting eyes shall be descaled. 2. The lifting eyes shall be free of injurious imperfections that would make them unsuitable for the intended use. The threads shall be undamaged upon receipt by the purchaser as demonstrated by the ability to accept a Go Ring Gage with normal hand force. 3. Eyebolts that are cracked, bent, or have damaged threads shall be discarded. 4. The shank of the eyebolt shall not be undercut and shall be smoothly radiused into the plane of the shoulder. <p>2.2.10 Number of Tests and Retests:</p> <ol style="list-style-type: none"> 1. Lot definition: <ol style="list-style-type: none"> a. A lot shall consist of forgings produced from one heat of steel per treatment charge. b. If more than one heat of steel is used per treatment charge, all heats must be tested as defined in section 11.2.1 of ASTM A-489. c. A treatment charge is defined as one furnace load of lifting eyes of the same size per quench and temper operation or in a continuous furnace as every 8 h of continuous operation in quenching and tempering of lifting eyes of the same size. 2. Number of Tests: <ol style="list-style-type: none"> a. Each lot shall be tested for proof load, breaking strength, tensile, and bend properties at the frequency specified in section 11.2.1 of ASTM A489. b. The number of tests for impact strength and grain size shall be in accordance with the manufacturer’s standard quality control practices. A specific number of tests are not required but the lifting eyes shall be produced by manufacturing practices and subject to mill tests and inspection to ensure compliance with the specified requirements. 3. Retests: <ol style="list-style-type: none"> a. If the results of the mechanical tests do not conform to the requirements specified, the manufacturer may retest the same lot if double the number of samples required for that lot are retested, in which case all additional tests shall meet the requirements of the specification. 		
Page 5 of 21		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>b. If any test specimen shows defective machining, it may be discarded and another specimen substituted.</p> <p>2.2.11 Inspection:</p> <ol style="list-style-type: none"> The manufacturer shall afford the purchaser’s quality assurance representative all reasonable facilities necessary to satisfy him that the lifting eyes are being produced and furnished in accordance with this specification. Mill inspection by the purchaser shall not interfere unnecessarily with the manufacturer’s operations. All tests and inspections shall be made at the place of manufacture, unless otherwise agreed to. <p>2.2.12 Certification:</p> <ol style="list-style-type: none"> When specified by the purchaser, a test report shall be furnished for each lot showing the following: <ol style="list-style-type: none"> Heat analysis and heat number(s), Results of proof load, breaking strength, tensile, and bend tests, Results of any supplementary requirements invoked, Statement of compliance with grain size and impact requirements, Purchase order number, Lot number(s), and ASTM specification number, including type, style, and date of issue. <p>2.2.13 Responsibility:</p> <ol style="list-style-type: none"> The party responsible for the lifting eye shall be the organization that supplies the lifting eye to the purchaser. <p>2.2.14 Product Marking:</p> <ol style="list-style-type: none"> Carbon Steel Eyebolts: Each lifting eye shall have the manufacturer’s name or identification mark forged in raised characters on the surface of the eyebolt. Alloy Steel Eyebolts: Each eyebolt shall have the symbol “A” (denoting alloy steel) and the manufacturer's name or identification mark forged in raised characters on the surface of the eyebolt. <p>2.2.15. Packaging and Package Marking:</p> <ol style="list-style-type: none"> Packaging: <ol style="list-style-type: none"> Unless otherwise specified, packaging shall be in accordance with ASTM Practice D 3951. When special packaging requirements are required, they shall be defined at the time of the inquiry and order. Package Marking: 		
Page 6 of 21		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>a. Each shipping unit shall include or be plainly marked with the following information:</p> <ul style="list-style-type: none"> • ASTM designation and type, • Size, • Name and brand or trademark of the manufacturer, • Number of pieces, • Purchase order number, and • Country of origin. <p>2.2.16 Supplementary Testing:</p> <p>1. Eye bolts shall be tested as follows:</p> <p>a. Impact tests shall be conducted on each lot. The number of tests shall be in accordance with section 11.2.1 of ASTM A-489. The results shall be reported to the purchaser.</p> <p>b. Proof load tests shall be conducted on each lifting eye. The results shall be reported to the purchaser.</p> <p>c. Grain size shall be determined on each tensile specimen. The results shall be reported to the purchaser.</p> <p>2.3 SHACKLES:</p> <p>Shackles shall meet or exceed the requirements of American Society of Mechanical Engineers (ASME) B30.26, Federal Specification RR-C-271D, associated amendments of ASTM A-148M.</p> <p>2.3.1 Material:</p> <p>1. Type IV shackles:</p> <p>a. Type IV, Grade A shackles, together with their pins and bolts shall be forged form carbon steel conforming to ASTM A576. Grade B shackles together with their pins and bolts shall be forged form alloy steel conforming to ASTM A-322. The limitation in the chemical composition shall be as specified in table 1A, of Federal Specification RR-C-271D and associated amendments as applicable for Grade A and B shackles. In addition, shackles 4-1/2 to 8-1/2 inches, ASTM A-148M, “Standard Specification for Steel Castings, High Strength, for Structural Purposes,” shall be followed.</p> <p>b. Attachments to Type IV shackles shall be zinc-coated.</p> <p>2.3.2 Design Factor:</p> <p>1. The design factor for shackles up to and including a 150 ton rated load shall be a minimum of 5.</p> <p>2. The design factor for shackles over 150 ton rated load shall be a minimum of 4.</p>		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>2.3.3 Zinc Coating:</p> <p>1. Where zinc coating is specified, the coating may be applied by the hot-dip galvanizing) process, by the electro-deposition process, or by the mechanically deposited coating process at the contractor’s option. If the hot-dip process is used, the coating shall be applied in accordance with ASTM A 153, class B3; if the electro-deposition process is used, it shall be in accordance with ASTM B 633, type II, class Fe/Zn 13; and if the mechanically deposited coating process is used, it shall be in accordance with ASTM B 695, type II, class 12. When the electro-deposition process is used, the coating shall be done on screw parts after threading and tapping is completed. When the hot-dip process is used, internal threads may be tapped or re-tapped after galvanizing. Zinc coating shall be adherent, smooth, and free from injurious lumps, blisters, dross, or flux. Where zinc coating of alloy steel is specified, the safe guarding against embrittlement and procedure for detecting embrittlement shall be in accordance with ASTM A-143.</p> <p>2.3.4 Threads:</p> <p>1. Screw-pin shackles shall be threaded after fabrication to final size and shape. Threads shall conform to FED-STD-H28 for Unified Coarse (UNC) threads unless the corresponding fine threads are specified. Threads on zinc-coated or self-colored finished shackles shall be not looser than a class 1 fit. The male threads of zinc-coated shackles may be undercut, as necessary, so that after coating they will properly mate (not less than class 1 fit) with the standard size female threads.</p> <p>2.3.5 Proof Testing:</p> <p>1. Shackles are not required to be proof tested unless specified by the purchaser. If proof tested, a shackle shall be inspected after the test.</p> <p>2.3.6 Proof Loads:</p> <p>1. Shackles shall withstand the proof loads shown in table XVII, section 4.4.2.2.1 of Federal Specification RR-C-271D and ASME B30.26 as follows: The more stringent proof load values between the two codes shall be applied.</p> <p>a. The proof load for a shackle up to and including a 150 ton rated load shall be a minimum of 2 and a maximum of 2.2 times the rated load.</p> <p>b. The proof load for a shackle over a 150 ton rated load shall be a minimum of 1.33 and a maximum of 2 times the rated load. Shackles shall withstand the proof loads without developing surface rupture or defects such as being bent, twisted, distorted, stretched, elongated, cracked, excessive thread damage, incomplete pin engagement or broken load bearing components that would interfere with</p>		
Page 8 of 21		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>serviceability or prevent disassembly of the pin. After proof loading, screw-pin shackles shall be disassembled by hand after the first turn.</p> <p>2.3.7 Breaking loads:</p> <p>Without breaking, shackles shall withstand the breaking loads shown in table XVII, section 4.4.2.2.1 of Federal Specification RR-C-271D and associated amendments as applicable.</p> <p>2.3.8 Working Load Limit:</p> <p>The working load limits of shackles covered by this specification shall be as shown in table XVII, section 4.4.2.2.1 of Federal Specification RR-C-271D and associated amendments as applicable. The terms “rated capacity” and “working load limit” are commonly used to describe rated load.</p> <p>2.3.9 Ductility:</p> <p>Shackles shall have sufficient ductility to permanently deform before losing the ability to support the load at the temperatures at which the manufacturer has specified for use. If the pin fractures, it shall show a permanent bend of not less than 20 degrees. If the body fractures, it shall show a permanent mid-shackle set of not less than 15 percent of the original spread between bows.</p> <p>2.3.10 Marking:</p> <p>Each shackle body shall be permanently and legibly marked in raised or stamped letters on the side of the shackle bow with the identifying manufacturer’s name or trademark, shackle size, and the working load limit (WLL). All shackle pins and bolts shall be marked with manufacturer’s name or trademark; in addition, all alloy pins and bolts shall be marked with the raised or stamped letters “HS” on the head. Shackle markings shall be raised or stamped letters or figures of the maximum practical height permitted by the size of the shackle component being marked, but not to exceed 3/4 inch in height by 1/8 inch in relief. Stamping dies shall be of the round bottom, low stress type. Marking location shall not interfere with the serviceability of the shackle assembly.</p> <p>2.3.11 Finish:</p> <p>Unless otherwise specified (see section 6.2 of Federal specification RR-C-271D and associated amendments as applicable.), shackle components shall be zinc coated as specified in this document or documents referenced herein.</p> <p>2.3.12 Form and dimension:</p> <p>The form of the respective shackle types and classes shall be similar to that shown on figures 19 and 20, section 6.2 of Federal Specification RR-C-271D and associated amendments as applicable. Except for reference dimensions, the dimensions of shackle bodies and component</p>		
Page 9 of 21		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>pins and bolts shall conform to the dimensional requirements specified in table XI through XVI of Federal Specification RR-C-271D and associated amendments as applicable. Reference dimensions are for information. (Note: See Amendment 1 of Federal specification RR-C-271D which replaced figure 19 and 20 and effects changes to Table XI through XVI.)</p> <p>2.3.13 Proof Test:</p> <p>Samples shall be subjected to proof loads shown in table XVII of Federal Specification RR-C-271D and associated amendments as applicable, either singly or in series. The diameter of the attachments used in proofing shall be not greater than the pin diameter of the shackle being tested and the application of the proof load shall be at the center of the pin. After releasing the proof load, each shackle shall be examined and disassembled as specified in section 3.5.3.1.2 “Proof Loads” of Federal Specification RR-C-271D and associated amendments as applicable.</p> <p>2.3.14 Breaking and Ductility Tests:</p> <p>After proof testing the required number of samples shall be subjected to the breaking loads shown in table XVII of Federal Specification RR-C-271D and associated amendments as applicable. The diameter of the attachment used in the breaking test shall be not greater than the pin diameter of the shackle being tested; the application of the load shall be at the center of the pin. After breaking, the sample shall be inspected and measured to determine conformance with section 3.5.3.1.5. The “Ductility” of Federal Specification RR-C-271D and associated amendments as applicable apply.</p> <p>2.3.15 Rejections:</p> <p>If any shackle fails to pass the proof test, all shackles in the lot shall be rejected. If any shackle fails to pass the breaking or ductility test, the lot shall be rejected.</p> <p>2.4 LINKS, RINGS, AND SWIVELS:</p> <p>The following recommendations are to be in conjunction with the standards of Occupational Safety & Health Administration (OSHA) 29 CFR 1910 or 29 CFR 1926, American Society of Mechanical Engineers (ASME) B30.26, The Hanford Hoisting and Rigging Manual, Chapter 10, and Federal Specification RR-C-271D.</p> <p>Links will include all types and be identified as alloy master links or assemblies, cold tuff fittings, weldless links or pear shape links. Rings will include all types and be identified as weldless rings.</p> <p>2.4.1 Design Factor:</p> <p>The design factor for links, rings, and swivels shall be a minimum of 5. Rings manufactured to the requirements of Federal Specification RR-C-271D have a minimum design factor of 6.</p>		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>2.4.2 Rated Loads:</p> <p>Rated loads shall be in accordance with the recommendation of the link, ring, or swivel manufacturer. The terms “rated capacity” and “working load limit” are commonly used to describe rated load.</p> <p>2.4.3 Materials:</p> <p>Links, rings, and swivels shall have sufficient ductility to permanently deform before losing the ability to support the load at the temperatures that the manufacturer has specified for use. Rings should be forged steel and weldless.</p> <p>2.4.4 Proof Testing:</p> <p>Links, rings, and swivels are not required to be proof tested unless specified by the purchaser. If proof tested, links, rings, and swivels shall be inspected after the test.</p> <p>2.4.5 Proof Loads:</p> <ol style="list-style-type: none"> 1. A proof load test (minimum, two times SWL) is required for links and rings used in critical lift service. A validated proof load test, conducted by the manufacturer or the Hanford Site contractor, meets this requirement. 2. Links and Rings that have been proof tested for critical service shall have a tag or other marking to indicate clearly to the user that proof testing has been done. <p>2.4.6 Identification:</p> <ol style="list-style-type: none"> 1. Each new link, ring, and swivel shall be marked by the manufacturer to show <ol style="list-style-type: none"> a. name or trademark of manufacturer b. size or rated load c. grade, if required to identify rated load <p>2.5 SWIVEL HOIST RINGS:</p> <p>Swivel Hoist Rings shall meet or exceed the requirements of American Society of Mechanical Engineers (ASME) B30.26.</p> <p>Swivel hoist rings will include all types.</p> <p>2.5.1 Materials:</p>		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware

Offeror Complies

Yes	No
-----	----

1. The hardware, excluding bushings and bearings, shall have sufficient ductility to permanently deform before losing the ability to support the load at the temperatures at which the manufacturer has specified for use.
2. Swivel hoist rings (Carbon steel or Alloy) may have similar temperature limitations as eyebolts. Components of swivel hoist rings (e.g., nuts, socket head cap screws) are typically manufactured in accordance with national standards, there is no national standard governing the manufacture of Swivel Hoist Rings. Specifications for Swivel Hoist Rings, including temperature limitations, are specified by the manufacturer.

2.5.2 Design Factor:

The minimum design factor shall be no less than 5 based on ultimate strength.

2.5.3 Rated Loads:

Rated load shall be in accordance with the recommendations of the hardware manufacturer. The terms “rated capacity” and “working load limit” are commonly used to describe rated load.

2.5.4 Proof Test:

Swivel Hoist Rings are not required to be proof tested unless specified by the purchaser. If proof tested, swivel hoist rings shall be inspected.

2.5.5 Proof Load Requirements:

The proof load shall be a minimum of 2 times the rated load.

2.5.6 Identification;

1. Each swivel hoist ring shall be marked to show
 - a. name or trademark of manufacturer
 - b. rated load
 - c. torque value
2. Swivel hoist rings shall be provided with instructions from the manufacturer.

Effects of Environment:

Temperature

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>a. When swivel hoist rings are to be used at temperatures above 400 degree F (204 degree C) or below -20 degree F (-29 degree C), the hardware manufacturer or a qualified person should be consulted.</p> <p>2.6 TURNBUCKLES:</p> <p>Turnbuckles shall meet or exceed the requirements of American Society of Mechanical Engineers (ASME) B30.26, Federal Specification FF-T-791b, and ASTM F-1145.</p> <p>2.6.1 Materials:</p> <ol style="list-style-type: none"> 1. Turnbuckles shall have sufficient ductility to permanently deform before losing the ability to support the load at the temperatures at which the manufacturer has specified for use. 2. Turnbuckles used in hoisting and rigging operations shall be fabricated from forged alloy steel. <p>2.6.2 Design Factor:</p> <p>The design factor for turnbuckles shall be a minimum of 5.</p> <p>2.6.3 Rated Loads:</p> <p>Rated loads shall be in accordance with the recommendations of the hardware manufacturer. The terms “rated capacity” and “working load limit” are commonly used to describe rated load.</p> <p>2.6.4 Proof Testing:</p> <ol style="list-style-type: none"> 1. Turnbuckles are not required to be proof tested unless specified by the purchaser. If proof tested, turnbuckles shall be inspected after the test. 2. Turnbuckles used for critical-lift service shall initially be proof tested at twice the rated capacity. Turnbuckles that have been proof tested (at the Hanford Site or by the manufacturer) shall have a tag or other marking to indicate clearly to the user that proof testing has been done. <p>2.6.5. Identification:</p> <ol style="list-style-type: none"> 1. Each turnbuckle shall be marked to show 		
Page 13 of 21		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<div> <div> <div>a. name or trademark of the manufacturer</div> <div>b. size or rated load</div> <div>c. grade for alloy eyebolts</div> </div> <div> <div>2.7 WEDGE SOCKETS:</div> <div> <p>Wedge Sockets shall meet or exceed the requirements of American Society of Mechanical Engineers (ASME) B30.26, and Federal Specification RR-S-550D, and Wire Rope Users Manual 3rd Edition, 1993.</p> <p>Wedge Sockets (compression hardware) will include all types.</p> <div> <div>2.7.1 Materials:</div> <div> <div>1. Wedge socket materials shall be of sufficient strength such that failure of the wire rope will occur before failure of the wedge socket at the temperatures, which the manufacturer has specified for use.</div> </div> <div> <div>2.7.2 Design Factor:</div> <div> <p>Due to the nature of the design and use, wedge sockets do not have a conventional design factor. Wedge sockets shall be designed to have an 80% minimum connection efficiency based on the wire rope published minimum breaking force with which they are used.</p> </div> </div> <div> <div>2.7.3 Rated Loads:</div> <div> <div>1. The rated load for wire rope assemblies using compression hardware is based on the following factors:</div> <div> <div>a. wire rope minimum breaking force</div> <div>b. 80% minimum connection efficiency</div> <div>c. design factor of the wire rope application</div> </div> </div> <div> <div>2.7.4 Proof Test:</div> <div> <p>Compression hardware is not required to be proof tested unless specified by the purchaser. If required, the proof test shall be applied to the wedge socket after the assembly is complete. If proof tested, compression hardware shall be inspected.</p> </div> </div> <div> <div>2.7.5 Proof Load Requirements:</div> </div> </div> </div> </div> </div></div>		
<div> <div>Page 14 of 21</div> </div>		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>The proof load shall be a minimum of 40%, but not exceed 50%, of the wire rope minimum breaking force unless approved by the compression hardware manufacturer or a qualified person.</p> <p>2.7.6 Identification:</p> <ol style="list-style-type: none"> Each new wedge socket body and wedge shall have forged, cast, or die stamped marking by the manufacturer to show <ol style="list-style-type: none"> name or trademark of manufacturer size model, if required to match wedge to body <p>2.7.7 Effects of Environment;</p> <ol style="list-style-type: none"> Temperature <ol style="list-style-type: none"> When wedge sockets are to be used at temperatures above 400 degree F (204 degree C) or below -4 degree F (-20 degree C), the wedge socket manufacturer or a qualified person should be consulted. <p>2.8 WIRE ROPE CLIPS:</p> <p>Wire rope clips shall meet or exceed the requirements of American Society of Mechanical Engineers (ASME) B30.26, Federal Specification FF-C-450, and Wire Rope Users Manual 3rd Edition 1993.</p> <p>Will include forged wire rope clips and fist grip clips.</p> <p>2.8.1 Materials:</p> <ol style="list-style-type: none"> Wire rope clip materials shall be of sufficient strength such that failure of the wire rope clip at the temperatures that the manufacturer has specified foe use. Saddles shall be forged steel. Clamps of the same size, type, and class, with the exception of Type IV, shall assemble readily with random selection of component parts. Type IV haft clamps are fabricated in matching pairs and parts are not interchangeable. <p>2.8.2 Design Factor:</p> <ol style="list-style-type: none"> Due to the nature of the design and use, wire rope clips do not have a conventional design factor. Wire rope clips shall be designed to have an 80% minimum connection efficiency based on the wire rope published minimum breaking force with which they are used. 		
<p>Page 15 of 21</p>		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>2.8.3 Rated Loads:</p> <ol style="list-style-type: none"> The rated load for wire rope assemblies using compression hardware is based on the following factors: <ol style="list-style-type: none"> wire rope minimum breaking force 80% minimum connection efficiency design factor of the wire rope application <p>Proof Test:</p> <ol style="list-style-type: none"> Compression hardware is not required to be proof tested unless specified by the purchaser. If required, the proof test shall be applied to the connection made by wire rope clips after the assembly is complete. After proof testing, wire rope clips on a finished assembly shall be re-tightened to the torque recommended by the wire rope clip manufacturer or a qualified person. If proof tested, compression hardware shall be inspected after the test. <p>2.8.4 Proof Load Requirements:</p> <ol style="list-style-type: none"> The proof load shall be a minimum of 40%, but not exceed 50%, of the wire rope minimum breaking force unless approved by the compression hardware manufacturer or a qualified person. <p>2.8.5 Identification:</p> <ol style="list-style-type: none"> Each new wire rope clip saddle shall have forged or die stamped markings by the manufacturer to show <ol style="list-style-type: none"> name or trademark of manufacturer size <p>2.8.6 Effects of Environment:</p> <ol style="list-style-type: none"> Temperature <ol style="list-style-type: none"> When wire rope clips are used at temperatures above 400 degree F (204 degree C) or below -40 degree (-40 degree C), the wire rope clip manufacturer or a qualified person should be consulted. 		
Page 16 of 21		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>I. Contractor compliance with Quality Assurance (QA) Procurement Clauses:</p> <ul style="list-style-type: none"> Identification of items with Part number/Model Number All items shall be identified with the part number/model number. Identification shall be on the item or the package containing the item. When the identification is on the item, such marking shall not impair the service of the item or violate dimensional, chemical, or physical requirements. Inspection and Test Report The Supplier shall submit legible, reproducible copies of Inspection/Test Reports. The report(s) shall include the following: <ol style="list-style-type: none"> Identification of the applicable inspection and/or test procedure utilized. Resulting data for all characteristics evaluated, as required by the governing inspection/test procedure. Traceability to the item inspected/tested, (i.e., serial number, part number, lot number, etc.). Signature of the Supplier’s authorized representative or agency which performed the inspections/tests. One copy of the documentation, unless otherwise specified, shall accompany the applicable item(s) shipped. Procurement of Potentially Suspect or Counterfeit Items Supplier shall warrant that “all items furnished under this Purchase Order/Contract Order are genuine (i.e., not counterfeit) and match the quality, test reports, markings and/or fitness for use required by the Purchase Order/Contract Order”. The statement shall be on supplier letterhead and signed by an authorized agent of the supplier. Any materials furnished as part of this Purchase Order/Contract Order which have been previously found to be suspect/counterfeit by the Department of Energy shall not be accepted. Suspect/Counterfeit Fastener Headmark lists: Suspect Bolt Head Marking Card http://www.hanford.gov/pmm/downloads/Other/Suspect_Bolt_Head_Marking_Card.pdf Stainless Steel Fastener Headmark List http://www.hanford.gov/pmm/downloads/Other/Suspect_Stainless_Steel_Fastener_Headmark_List.pdf 		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p> • Certificate of Conformance The Supplier/Manufacturer shall provide a legible/reproducible Certification of Conformance. Supplier’s/Manufacturer’s authorized representative responsible for quality shall sign the Certification of Conformance. This Certification of Conformance shall, as a minimum: <ol style="list-style-type: none"> 1. Identify the appropriate Purchase Order/Contract Order number under which the material, equipment, item or service is being supplied. 2. The COC shall identify the specific procurement requirements to be met by the purchased item or service. The procurement requirements identified shall include any approved changes, waivers, or deviations applicable to the item or service. 3. For OCRWM-related items only, the COC shall also identify any procurement document requirements that have not been met together with an explanation and the means for resolving the nonconformances. 4. The COC shall be signed or otherwise authenticated by a supplier’s representative. For OCRWM-related items only, the person signing the COC shall be the one who is responsible for this QA function and whose responsibilities and position are described in the supplier’s QA program. One copy of the documentation, unless otherwise specified, shall accompany the applicable item shipped. For subsequent shipments on this Purchase Order/Contract order, reference may be made to documentation provided with earlier shipments, instead of duplicating such documentation. </p> <p> II. The Contractor shall procure all items either directly from a Original Equipment Manufacturer (OEM) or from the manufacturers Authorized Distributor (AD). </p> <p> III. The Contractor shall assure that the Manufacture shall have an ISO 9001-2000 approved Quality Management System for design and manufacture of rigging related hardware. The Manufacture shall provide the Contractor with a certificate of conformance. </p> <p> IV. The Contractor shall have in place a QA system which addresses, as a minimum, the following: <ol style="list-style-type: none"> A. Organizational structure shall be identified, including functional responsibilities, levels of authority, and interfaces for those managing, manufacturing, inspecting, testing and auditing work. B. Personnel performing work shall be trained to ensure that they are capable of performing their assigned work. Additionally, personnel training and qualification record shall be maintained and kept on file by the Seller for the duration of the contract, and made available to FH QA upon request. </p>		
Page 18 of 21		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>C. Work shall be performed to established technical standards and administrative controls, using approved instructions, procedures and other appropriate means.</p> <p>D. Inspection of items shall be conducted using established acceptance and performance criteria to ensure the item meets procurement requirements.</p> <p>E. Controls for handling, storage, cleaning, packaging, preserving, and shipping of items to prevent damage or loss and to minimize deterioration shall be established.</p> <p>IV. The Contractor shall assure the Manufacture has a Quality Control system which addresses as a minimum the following;</p> <ol style="list-style-type: none"> 1. Test Reports shall be considered permanent records and shall be in conformance with the requirements prescribed in associated national consensus standard/specifications (e.g., ASTM) for each lot of products supplied. 2. The manufacturer shall have on file a written system for rigging hardware traceability, as well as, a written quality control procedure. The system shall substantiate traceability to specific mill lots, manufacturing procedures, inspection, and approval criteria. 3. The Manufacturer’s verification that the test reports data conforms to requirements prescribed in the associated standard/specification shall be documented on the test report, or on inspection/acceptance forms traceable to the test report. 4. Test reports shall identify the name and address of the Manufacturer, which may be identified by letterhead, logo, or similar markings. 5. Test reports shall be legible and reproducible. <p>A. Certificate of Conformance shall be in accordance with the following:</p> <ol style="list-style-type: none"> 1. The Manufacture or Contractor shall provide a legible/reproducible Certification of Conformance with their letter head/logo for each lot/shipment of rigging hardware. The Manufacturer’s or Contractor’s authorized representative responsible for quality shall sign the Certification of Conformance. 2. The Certification of Conformance shall as a minimum, identify each piece of rigging hardware’s unique identification number and the appropriate Purchase Order Release number on which the rigging hardware are being supplied. The Contractor shall warrant that all items furnished meet the requirements of the Contract and are genuine (i.e., not counterfeit). 		
Page 19 of 21		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>B. Marking/Identification Verification and Acceptance</p> <ol style="list-style-type: none"> 1. The Contractor shall verify that the rigging hardware identification meets the requirements prescribed in the associated specification. <p>C. Dimensional Verification and Acceptance</p> <ol style="list-style-type: none"> 1. The Contractor shall verify that the material/item does not exhibit shipping and/or storage damage, has a workmanlike finish free of injurious defects, and is within the other established dimensional requirements as described in the manufacturer's catalog. <p>D. Exclusion of Misrepresented Items</p> <ol style="list-style-type: none"> 1. Suspect/counterfeit item detection criteria shall be incorporated in inspection planning, as appropriate; to assure identification and to prevent the Contractor from providing suspect/counterfeit items to FH or it's subcontractors. The planning shall exhibit specific characteristics and detection of suspect/counterfeit high strength graded fasteners and items to prevent contamination of the Hanford Site from outside procurement sources. 2. Any fasteners supplied with head marks matching those displayed on the attached Suspect/Counterfeit Fastener Head mark list (Exhibit 1), or facsimiles thereof, shall be deemed to be unacceptable under the terms of this contract. 3. Suspect/counterfeit is defined as an item that potentially or actually does not meet a requirement to conform to national consensus standards or some other specified standard or is and improper copy or modification of an item that does meet such standards. 4. Forms of products misrepresentation of major concern include, but are not limited to the following: <ul style="list-style-type: none"> • Falsified product sources • Falsified quality assurance records • False labeling as to qualification or acceptance by testing/certifying organizations • Used/refurbished products misrepresented as new products 5. If suspect/counterfeit items are discovered as a result of surveillance or inspection activity, the Manufacture or Contractor shall document this on an Inspection Checklist or a format that is their company equivalent, segregate the item, and notify FH QA. 6. Materials shall be new and meet the requirements set forth in Attachment B, Procurement Specification for Rigging Hardware 		

RFP SM04042011 – Technical and QA Checklist for Rigging Hardware	Offeror Complies	
	Yes	No
<p>7. Materials shall be those specified in the order. The Contractor shall not make substitution without prior authorization from the buyer.</p> <p>E. Documentation Requirements</p> <p>1. Records need not be originals but shall be legible to the fourth generation when reproduced in any media. Records shall be legible, retrievable and traceable.</p> <p>Incorrect data shall not be obliterated by the use of whiteout, correction tape, scribbling or any other method. Correction to documents shall be accomplished as follows. Striking a single line through the incorrect information, and inserting the correction in permanent ink as close as possible to the original data. The correction shall be initialed and dated by the person making the correction. Use of pencil or water-soluble ink is prohibited.</p>		
Page 21 of 21		